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Mrs. Wilks

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Engineering

S. H. McCrory, Chief

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To Members of the Staff,
Bureau of Agricultural Engineering.

On July 1 the new Bureau of Agricultural Engineering began to function. I hope this will prove to be an important date in the history of American agriculture. Recently I addressed to the individual members official notices of assignment to the divisions in which they have been allocated, and here I take occasion to address a more personal word to each of you.

To the members outside of Washington the change in organization from a division to a bureau in the Department will not be particularly apparent. In the Washington office, however, there has been considerable change, particularly by the addition of the administrative work including accounting, personnel records, and general files. This has required an appreciable addition to the headquarters force. From the Bureau of Public Roads we have acquired Mr. G. P. Wolf, Administrative Officer; Mr. L.E. Eliff, in charge of accounts; Miss M. R. Slayton, in charge of personnel records; and Miss Ellen Fitzgerald, in charge of files. All of these were handling the same work for our Division in that bureau, and we are to be congratulated in having them carry on for us. From the same bureau has come also Miss Blanche M. Joyce, Assistant Editor, whose prior experience in newspaper work will be of particular value in getting results of our investigations to a larger number of the farmers through the non-technical press, and more directly than is possible through bulletins and professional journals.

The establishment of the Bureau of Agricultural Engineering is the result of a devotion to the service of agriculture, by the members of our staff, which has won the support of many persons interested in the advancement of rural living. I have deeply appreciated the spirit of service that has been evident in our personnel. The change from a subordinate division to a bureau status was recommended by the Secretary, approved by the Bureau of the Budget, and authorized by Congress for the purpose of enlarging our opportunity to serve the farmers of the Nation. With this expression of confidence in mind, we should - and I am confident we shall - make greater progress than heretofore in our particular field of endeavor, and fully justify the recognition that has been accorded us.

Very sincerely

S. H. McCrory

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Mr. H. H. Barrows, Assistant Chief of Bureau, is on an extensive field trip in which he will inspect work in progress in the West and Southwest. He will return to Washington about August 1.

L. A. Jones, Chief of the Division of Drainage and Soil Erosion Control, after attending the A. S. A. E. meeting at Ames went to St. Paul, Minnesota, where he had a conference with Mr. Raphael Zon of the Forest Service in regard to the proposed soil erosion station that has been located in the vicinity of La Crosse, Wisconsin. From St. Paul Mr. Jones visited the soil erosion farms at Clarinda, Iowa, Guthrie, Oklahoma, and Tyler and Temple, Texas. On the trip talks were made at meetings of extension workers at Enid, Oklahoma and Temple, Texas. He then returned to his headquarters at Washington, D. C.

The following items regarding the soil erosion experiment farms were furnished by C. E. Ramser, in charge of the engineering work on the soil erosion experiment farms:

R. R. Drake states that the small Gleaner harvester thresher operated very successfully over the small terraced plots on the Hays soil erosion project and across small gullies and ditches on an adjoining field on the Station lands. A rain of about 3 inches occurred on the morning of June 21, which produced considerable runoff from plats and graded terraces. All of the water collected above the level terraces disappeared in 36 hours.

Arrangements have been made at Guthrie, Oklahoma, with the County Agent to conduct a number of terracing demonstrations. Terraces have been built with a County 60-horsepower Caterpillar tractor and Stockland 12-foot road grader. Mr. H. E. Bergschneider, State Agricultural Engineer, reports that the cost of building terraces about 25 feet wide and 18 inches high with this equipment was between \$.80 and \$1.00 per acre on land with slopes of 3 to 5 per cent where no scraper work was required to build up low places. Four to six rounds were required in building the terraces. This cost is based on the actual cost of labor and fuel for operating the tractor and grader. A recent Oklahoma law provides that the idle County road equipment can be used by the farmer for building terraces at simply the cost of operation of the equipment.

R. W. Baird reports that crops are in good condition on the East Texas Soil Erosion Experiment Farm near Tyler. Several rains which occurred about the middle of June saved the crops and caused a measurable run-off from most of the experimental terraces.

A. T. Holman was appointed to the position of Agricultural Engineer effective July 1, and reported for duty at Bethany, Mo. where he will be in charge of the engineering experiments on the Bethany Soil Erosion Experiment Farm.

P. C. McGrew reports that an excellent crop of peas and a fair crop of wheat is expected on the Pullman Soil Erosion Experiment Farm this year.

Henry Dunlavy, Superintendent of the Texas Blackland Agricultural Experiment Station, and H. O. Hill attended a terracing demonstration at the Hollandale farm near Dallas, Texas, on July 1, where a variety of terracing equipment was used in building terraces. Terraces 22 feet wide and 20 inches high were built with a 60-horsepower Caterpillar tractor and road grader with 12-foot blade and 3-foot extension blade in two rounds. This type of equipment holds the record for building terraces, from the standpoint of cost and time required.

R. A. Norton reports that the corn crop on the Clarinda Soil Erosion Experiment Farm is in excellent condition despite the hot weather. He has completed the survey at the Clarinda, Iowa farm and detailed plans are being worked out so that terraces on the farm can be constructed this fall.

W. W. McLaughlin, Chief of the Irrigation Division met H. H. Barrows in Utah about the first of July and showed him over the work in Utah, Idaho, Oregon, and as far as Berkeley, Calif. The trip from Utah was made by automobile.

Mr. McLaughlin states that considering the West as a whole, this is the driest season, with the shortest water supply, on record. In many sections, irrigation ditches will be dry by or before the end of July. The scarcity of water in surface streams has greatly stimulated the installation of pumping equipment and the development of underground water.

A. A. Young's activities on the Kootenai Valley investigation at Bonners Ferry, Idaho, included taking a crop census covering each 40 acres of the 22,000 acres in crop, and making maps showing in colors the location and extent of each crop; collecting data at 300 selected points throughout the valley on the condition of the various crops as to color, vigor, stand, height, condition of heads of grain, stage of growth and effect on crop of depth to ground water; collecting samples of soil in tubes for the purpose of making certain soil drainage experiments; making bi-monthly measurements of depths to ground water along 18 lines of special wells previously established, with notes on condition of crops at each well; collecting data covering undrained areas in each of the 12 drainage districts between Bonners Ferry and the Canadian boundary; making measurements of consumptive use of water by spring wheat and peas grown in tanks on experimental plot. Mr. Young is using one full-time and one part-time assistant in this work which is under the general supervision of L. T. Jessup.

Carl Rohwer is preparing a report on current meters, covering the results of the study begun at the hydraulic laboratory at Fort Collins, Colo., in 1915, and carried on from time to time since that date. The study includes an investigation of the performance of various types of meters when rated under different conditions at both tangent and rotary stations, and also of the accuracy with which these meters measured different quantities of water under different conditions when using the various standard methods of making gagings. The report covers the history of current meters, rating equipment, methods of determining the equations of current meters, the agreement of duplicate ratings and the effect of integrating the meter, of bearing adjustment, of depth and nearness to the walls of the rating channel, and of turning the meter to the right and left and up and down. The meters used in the investigation include Price, Ott, Hoff, Fteley and Stearns, and Ritchie-Haskell.

Colin A. Taylor has designed a recording evaporimeter for use in connection with the Devil Canyon project. This instrument is designed to give a record that closely parallels transpiration. A Fergusson recording rain gage is used as a base and in place of the catchment for the rain, a shallow black pan 2 feet in diameter is used. The apparatus is placed in a wooden box for lateral heat insulation. The maximum depth of water is 0.6 inch so that there is very little heat storage in the water and the solar energy received is used in vaporizing water with but little time lag. It is expected that the record can be correlated with the diurnal changes in stream flow.

L. M. Winsor submitted a manuscript on "A System of Flood Control for Mountain Streams." During the month Mr. Winsor checked conditions at several gravel control structures throughout Utah, following the high water season for the year. All structures were found to be intact and to have served their full purpose. The Salt Creek barrier is holding back the sand, gravel, and other debris after nine seasons of operation without additional expense since construction was completed. Prospects are favorable for continuous complete control of gravel and floods on Salt Creek without further expense for another 5 or more years, and then the outlay will not exceed a total expense of \$500 to put the barrier in condition for control over another 20 years or more. It is estimated that this structure has saved the irrigation company an outlay of between \$4,500 and \$4,800 per year for cleaning gravel from canals.

O. V. P. Stout went to San Bernardino, Calif., early in the month to look over the dam site in Devil Canyon, where investigations are to be conducted in cooperation with the U. S. California Forest Experiment Station on the use of water by native growths. The purpose of the trip was to advise concerning the proper type of dam to be constructed. Several tentative designs of the dam and appurtenant structures were considered. The dam is in reality merely a cut-off wall of concrete, with some reinforcement, put down about 20 feet to bed rock in the bed material of the canyon. Its purpose is to bring the underground flow of water to the surface, where it may be measured along with the surface flow. The measurement of flow up to one second-foot will be accomplished by means of a 90-degree triangular weir notch, and a Parshall flume will be used for greater flows. The structure was practically complete at the end of the month.



After serving for the past four years as Secretary of the East Bay Federal Business Association, A. T. Mitchelson has recently been elected Vice-President of that organization.

R. B. Gray, Acting Chief of the Division of Farm Mechanical Equipment visited the Rantoul, Illinois, Airport June 19 and proceeded to Chicago where in company with S. H. McCrory, he attended the conference of the Advisory Council on Research in Farm Mechanical Equipment June 20. He then proceeded to Ames and attended the A.S.A.E. annual meeting. Mr. Gray spent July 7 and 8 at the Washington office.

In attendance at the A.S.A.E. meeting were also Wallace Ashby, S. W. McBirney, and L. G. Schoenleber, of the Toledo office, and Thayer Cleaver of Urbana.

Thayer Cleaver is working at Urbana on the manuscript for a bulletin covering the cooperative investigations on corn borer control machinery being conducted in Illinois.

I. F. Reed and A. H. Graves have been conducting further studies to note the effect of shape of plow bottom, speed of plowing, and packing due to tractor wheels on the draft of plows used in corn borer control. A cable system is used as a check for comparing the tractor wheel packing effect.

S. W. McBirney and H. C. Mauer have commenced the reconstruction work on an ensilage harvester for converting it into a combination picker, low cutter, and stalk mutilator.

O. K. Hedden has completed the supervision of the installation of the machinery and equipment in the new shop at Toledo.

Messrs. Merrill, Irons, and Young, of South Norwalk, Conn., are making plans for conducting a series of corn borer machinery demonstrations in New England commencing the latter part of July.

C. K. Shedd has been transferred from Bethany, Mo. to Ames, Iowa, where he has been assigned to the proposed corn production machinery project to be carried on in cooperation with the Department of Agricultural Engineering of the Iowa State College. Mr. Shedd's work will hereafter be under the supervision of R. B. Gray, Division of Mechanical Equipment.

M. C. Betts, Chief of the Division of Plans and Service, reports that some new sketches have been prepared for a poultry feeding and fattening station at Beltsville, Md. This station will be used in experimental work of the Bureau of Animal Industry. Drawings and specifications are about completed for the supply depot for the Bureau of Public Roads at Ogden, Utah. It is expected that proposals will be issued for these buildings in the near future. It is expected that work will be started soon on plans and specifications for a second depot for the Bureau of Public Roads to be erected at Portland, Oregon.

A. H. Senner has recently completed specifications for a fully-automatic gas-fired steam heating system for the Bureau of Public Roads garage at Ogden, Utah. Instead of ordinary radiators, the garage will

be equipped with unit heaters practically throughout. He has also completed specifications for two oil-fired heating systems for the Radio Wave Investigation laboratories to be built by the Bureau of Standards at Beltsville, Maryland. Special precautions were taken to obviate any disturbing radio emanations from the oil burner motor and igniter.

Wallace Ashby, Chief of the Division of Structures, has transferred his headquarters from Toledo, Ohio to Washington, D. C. in order to take over his new duties.

S. J. Dennis who has been engaged in a study of temperature distribution in cold storage room and the effect of various arrangements of cooling pipes, is preparing a report on the results obtained. A cold storage room was specially equipped for this study, with cooling coils arranged so as to be readily shifted to different positions in the room for studying the effect of various arrangements of the same piping. Temperatures were read from outside the room by means of thermocouples suspended from an overhead carrier, operated by remote control so that the thermocouples could be moved across the room to any points where temperature readings were required.

Differences in temperature in different parts of cold storage rooms are often considerably greater than is generally supposed. Cooling pipes arranged in a single bank on wall of room with topmost coil some distance below the ceiling, gave the least satisfactory results, the temperature at the ceiling with this arrangement being about 5° higher than at the floor. About one-half this difference, however, occurred between the top of the coils and the ceiling so that the upper portion of the room above top of coils was distinctly less effective for storage purposes than the lower portion. A board baffle mounted in front of the cooling pipes partly remedied this undesirable condition and extending the baffle up to within a few inches of the ceiling produced still better results, the floor to ceiling difference being reduced to $3\frac{1}{2}$ degrees, with no change in the piping itself. Mounting the pipes in a single horizontal layer close to ceiling produced the most uniform temperature, the maximum difference with this arrangement being less than one degree. The results demonstrate that cooling pipes in a cold storage room will do most effective cooling when placed at the highest possible level in the room.

S. P. Lyle in charge of extension activities, is visiting extension workers in the States of Iowa, Kansas, Oklahoma and Missouri. During the latter part of July he will visit extension workers in the New England States. A considerable part of his travels are being made by automobile.

George R. Boyd in charge of farm land development investigations, visited J. G. Sutton at Quincy, Ill. in regard to the proposed project on drainage district finances. He also visited O. M. Page in regard to the Mississippi flood control project and N. A. Kessler on the land development project in Minnesota. En route to his headquarters at Richmond, Virginia, Mr. Boyd spent a day or two in the Washington office.

